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CLAIMS:

What is claimed is:

- 1 1. A method of performing an instant copy of data,
2 comprising:
3 receiving a write operation to a data location in
4 one of an initial physical storage area and an additional
5 physical storage area;
6 performing an instant copy operation on the data
7 location; and
8 writing new data to the data location in accordance
9 with the write operation, wherein the instant copy
10 operation includes generating a pointer to one of the
11 new data and original data in the data location.
- 1 2. The method of claim 1, wherein the data location is
2 in the initial physical storage area, and wherein the
3 instant copy operation includes copying a portion of
4 original data from the data location in the initial
5 physical storage area to a second data location in the
6 additional physical storage area in response to receiving
7 the write operation.
- 1 3. The method of claim 2, wherein the pointer points to
2 the portion of original data copied to the additional
3 physical storage area.

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1 4. The method of claim 1, wherein the data location is
2 in the additional physical storage area.

1 5. The method of claim 4, wherein the instant copy
2 operation includes not copying a portion of original data
3 from the initial physical storage area to the additional
4 physical storage area.

1 6. The method of claim 4, wherein the pointer points to
2 new data written to the data location in the additional
3 physical storage area.

1 7. The method of claim 1, wherein the initial physical
2 storage area is a variable dynamically changeable mapping
3 scheme storage area.

1 8. The method of claim 2, wherein the portion of
2 original data has a size that is different with respect
3 to other portions of data in the initial physical storage
4 area.

1 9. The method of claim 1, wherein the pointer is
2 generated in a pointer table of meta-data associated with
3 the additional physical storage area.

1 10. The method of claim 8, further comprising storing
2 the pointer and an associated size of the portion of
3 original data in a meta-data data structure.

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1 11. The method of claim 1, wherein the pointer is stored
2 in a pointer table of meta-data having a plurality of
3 pointers, and wherein the plurality of pointers include a
4 pair of pointers representing a range of pointers that
5 point to portions of original data that have not been
6 changed by a write operation.

1 12. A computer program product in a computer
2 readable medium for performing an instant copy of data,
3 comprising:

4 first instructions for receiving a write operation
5 to a data location in one of an initial physical storage
6 area and an additional physical storage area;

7 second instructions for performing an instant copy
8 operation on the data location; and

9 third instructions for writing new data to the data
10 location in accordance with the write operation, wherein
11 the instant copy operation includes generating a pointer
12 to one of the new data and original data in the data
13 location.

1 13. The computer program product of claim 12, wherein
2 the data location is in the initial physical storage
3 area, and wherein the second instructions for performing
4 an instant copy operation include instructions for
5 copying a portion of original data from the data location
6 in the initial physical storage area to a second data

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7 location in the additional physical storage area in
8 response to receiving the write operation.

1 14. The computer program product of claim 13, wherein
2 the pointer points to the portion of original data copied
3 to the additional physical storage area.

1 15. The computer program product of claim 12, wherein
2 the data location is in the additional physical storage
3 area.

1 16. The computer program product of claim 15, wherein
2 the second instructions for performing the instant copy
3 operation include instructions for not copying a portion
4 of original data from the initial physical storage area
5 to the additional physical storage area.

1 17. The computer program product of claim 15, wherein
2 the pointer points to new data written to the data
3 location in the additional physical storage area.

1 18. The computer program product of claim 12, wherein
2 the initial physical storage area is a variable
3 dynamically changeable mapping scheme storage area.

1 19. The computer program product of claim 13, wherein
2 the portion of original data has a size that is different

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3 with respect to other portions of data in the initial
4 physical storage area.

1 20. The computer program product of claim 12, wherein
2 the second instructions for performing the instant copy
3 operation include instructions for generating the pointer
4 in a pointer table of meta-data associated with the
5 additional physical storage area.

1 21. The computer program product of claim 19, wherein
2 the second instructions for performing the instant copy
3 operation include instructions for storing the pointer
4 and an associated size of the portion of original data in
5 a meta-data data structure.

1 22. The computer program product of claim 12, wherein
2 the second instructions for performing the instant copy
3 operation include instructions for storing the pointer in
4 a pointer table of meta-data having a plurality of
5 pointers, and wherein the plurality of pointers include a
6 pair of pointers representing a range of pointers that
7 point to portions of original data that have not been
8 changed by a write operation.

1 23. An apparatus for performing an instant copy of data,
2 comprising:

PENDING PCT APPLICATION

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3 means for receiving a write operation to a data
4 location in one of an initial physical storage area and
5 an additional physical storage area;

6 means for performing an instant copy operation on
7 the data location; and

8 means for writing new data to the data location in
9 accordance with the write operation, wherein the instant
10 copy operation includes generating a pointer to one of
11 the new data and original data in the data location.